Hot tier - An online tier optimized for storing data that is accessed or modified frequently. The hot tier has the highest storage costs, but the lowest access costs.  
Cool tier - An online tier optimized for storing data that is infrequently accessed or modified. Data in the cool tier should be stored for a minimum of 30 days. The cool tier has lower storage costs and higher access costs compared to the hot tier.  
Cold tier - An online tier optimized for storing data that is rarely accessed or modified but still requires fast retrieval. Data in the cold tier should be stored for a minimum of 90 days. The cold tier has lower storage costs and higher access costs compared to the cool tier.  
Archive tier - An offline tier optimized for storing data that is rarely accessed, and that has flexible latency requirements, on the order of hours. Data in the archive tier should be stored for a minimum of 180 days.

Which tier should be used for my requirement:

* Records older than 3 months should be fetched if needed within seconds.

For your requirement—records older than 3 months that should be fetched within seconds—the cold tier is the most appropriate choice. The cold tier is specifically designed for data that is rarely accessed or modified but still requires fast (online) retrieval, typically with the same retrieval latency as the hot and cool tiers (milliseconds).[[1]](#fn1)[[2]](#fn2)[[3]](#fn3)

* The cold tier offers lower storage costs than the hot and cool tiers but has higher access (read) costs.
* It has a recommended minimum retention period of 90 days, matching your threshold for "older than 3 months."
* Unlike the archive tier, which is offline and may take hours to restore data, the cold tier ensures immediate access when needed.[[2]](#fn2)[[3]](#fn3)[[4]](#fn4)[[1]](#fn1)

The archive tier would not be suitable, as its retrieval times are measured in hours, not seconds. The cool tier is optimized for infrequently accessed data, but its price/performance profile is for data accessed more frequently than your case; cold tier is both more economical and still supports instant retrieval for your use case.[[5]](#fn5)[[4]](#fn4)[[1]](#fn1)[[2]](#fn2)

In summary:

* Use cold tier for records older than 3 months when instant (second-level) access is required.[[3]](#fn3)[[4]](#fn4)[[1]](#fn1)[[2]](#fn2)

⁂

Does cost varies if data older than 1 year, younger than 2 years is accessed than for data older than 2 years, younger than 3 years in Cold tier?

The cost of accessing data in the Cold tier (for major cloud providers like Azure, AWS, and Google Cloud) does **not vary based on the specific age of the data** (for example, whether data is older than 1 year but younger than 2 years, or older than 2 years but younger than 3 years).

Instead, the cost structure is as follows:

* You pay a fixed **storage rate per GB per month** for all data in the Cold tier, regardless of its age within the tier.
* **Access (read) and transaction costs per operation** are also fixed for the Cold tier and do not change based on the data's age.
* The only time-based cost consideration is meeting the **minimum retention period** (typically 90 days). If you delete or move data out of the Cold tier before 90 days, you incur an early deletion fee to cover the remainder of the period. However, as soon as an object has met the required minimum (e.g., 90 days), there is **no additional or reduced cost based on its further age**—it is simply billed at the Cold tier’s current rates when accessed.[[6]](#fn6)[[7]](#fn7)[[8]](#fn8)

In summary: **Whether your cold data is 1 year, 2 years, or 3 years old, the access and storage costs in the Cold tier remain the same (beyond required minimum retention)**. There is no cost difference between accessing a 1.5-year-old record versus a 2.5-year-old record if both are in the Cold tier and have met the minimum retention period.

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What is on-paper, the retrieval times for Cold tier, and please quantify the costs, assuming there are around 2M records of around 300KB each is residing in Cold tier, and around 500,000 records are accessed.

**Cold Tier Retrieval Times (On Paper)**

* **Retrieval Latency**: The Cold tier is designed for *online* access, with retrieval latency typically in the **milliseconds to seconds** range—effectively the same as the hot and cool tiers, and *not* hours like the archive tier. This ensures that you can fetch data almost instantly if needed.[[9]](#fn9)[[10]](#fn10)[[11]](#fn11)

**Quantifying Costs for the Cold Tier**

**Input Data**

* **Total Records**: 2,000,000
* **Average Record Size**: 300KB per record
* **Records Accessed**: 500,000

**Calculations**

1. **Total Storage in Cold Tier**:
2. **Total Accessed Data**:

**Cold Tier Costs (Estimates)**

**Latest Azure Cold Tier Pricing (as of 2025):**

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Rate | Calculation | Estimate |
| Storage Cost per GB/month | $0.0045[[10]](#fn10)[[12]](#fn12) | 572.2GB × $0.0045 | $2.57/month |
| Access Cost per GB | $0.03[[10]](#fn10) | 143.1GB × $0.03 | $4.29 |
| Read Operations (per 10,000) | $0.10[[10]](#fn10) | 500,000 / 10,000 × $0.10 = 50 × $0.10 | $5.00 |
| **Total Retrieval Cost** | Storage + Access + Ops | $2.57 (storage) + $4.29 (access) + $5.00 (reads) | **$11.86** |

**Summary Table**

|  |  |  |
| --- | --- | --- |
| Category | Estimate | Notes |
| Retrieval Time | Milliseconds | Data is online, instantly accessible[[9]](#fn9)[[10]](#fn10) |
| Storage Amount | 572.2GB | 2M × 300KB |
| Accessed Data | 143.1GB | 500K × 300KB |
| Storage Cost/month | $2.57 | 572.2GB at $0.0045/GB |
| Access Cost | $4.29 | 143.1GB at $0.03/GB |
| Read Operations | $5.00 | 500,000 reads at $0.10 per 10,000 |
| **Total Cost** | **$11.86** |  |

**Key Points:**

* Retrieval from the Cold tier is effectively instant (milliseconds to a few seconds).
* Costs scale mostly with *data retrieved* and *number of operations*, not with file age or hot/cold transitions (once in the tier >90 days).[[10]](#fn10)[[9]](#fn9)
* Costs across providers (Azure, AWS, GCP) are very similar for the “cold”/“infrequent access” class but may vary slightly—always check current region-specific pricing.

This breakdown will help estimate both performance and cost for your projected scenario.

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1. <https://learn.microsoft.com/en-us/azure/storage/blobs/access-tiers-overview>

1. <https://help.mspbackups.com/billing-storage/storage-providers/azure/storage-classes>

1. <https://learn.microsoft.com/en-us/answers/questions/1470669/what-are-the-different-types-of-access-tiers-we-ha>

1. <https://docs.azure.cn/en-us/storage/blobs/storage-blob-use-access-tier-dotnet>

1. <https://learn.microsoft.com/en-us/azure/storage/blobs/archive-cost-estimation>

1. <https://learn.microsoft.com/en-us/azure/storage/blobs/access-tiers-overview>

1. <https://intercept.cloud/en-gb/blogs/azure-storage-pricing>

1. <https://cloud.google.com/storage/pricing>

1. <https://learn.microsoft.com/en-us/azure/storage/blobs/access-tiers-overview>

1. <https://learn.microsoft.com/en-us/azure/storage/blobs/archive-cost-estimation>

1. <https://www.vida.studio/blog-posts/an-introduction-to-hot-and-cold-cloud-storage-tiers>

1. <https://www.economize.cloud/blog/azure-blob-storage-pricing/>